JTRS JPO SCA Extension Workshop
SDR Code Portability with MATLAB and Simulink

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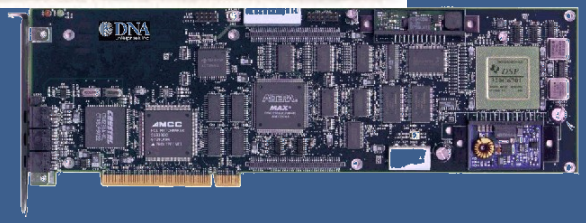
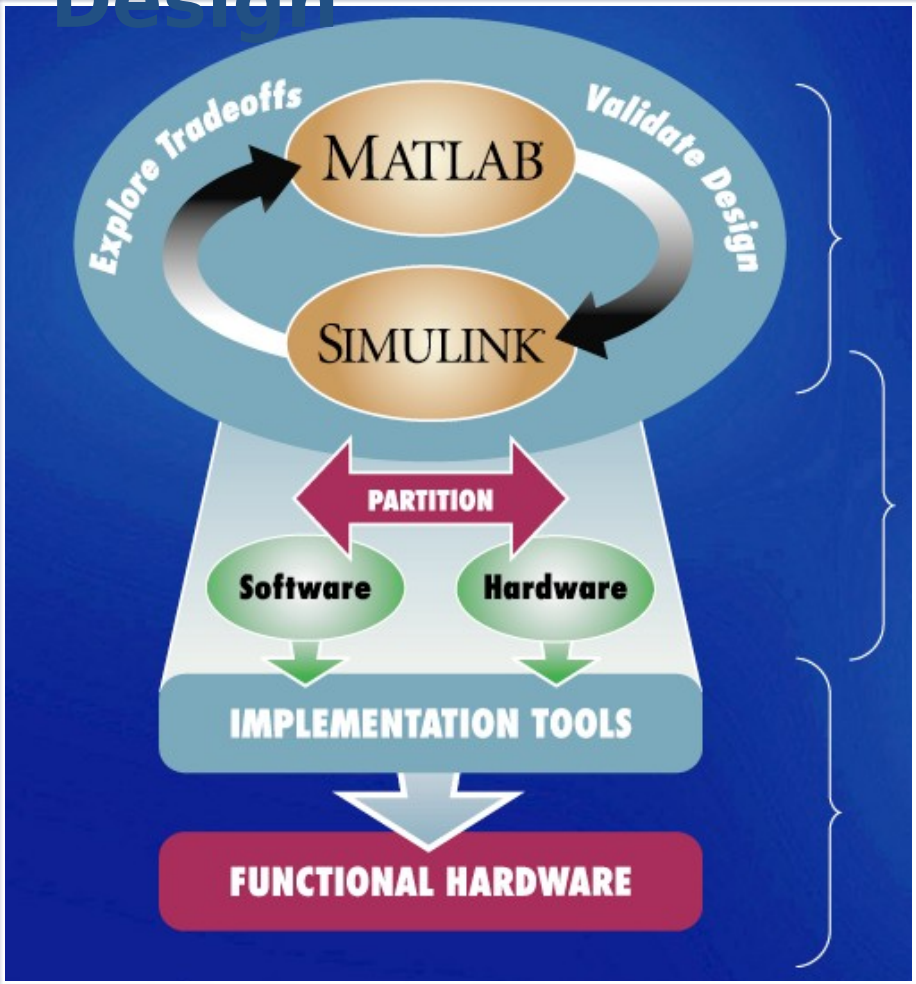


Signal Processing and
Communications

www.mathworks.com

MathWorks Platform for Model-Based Design

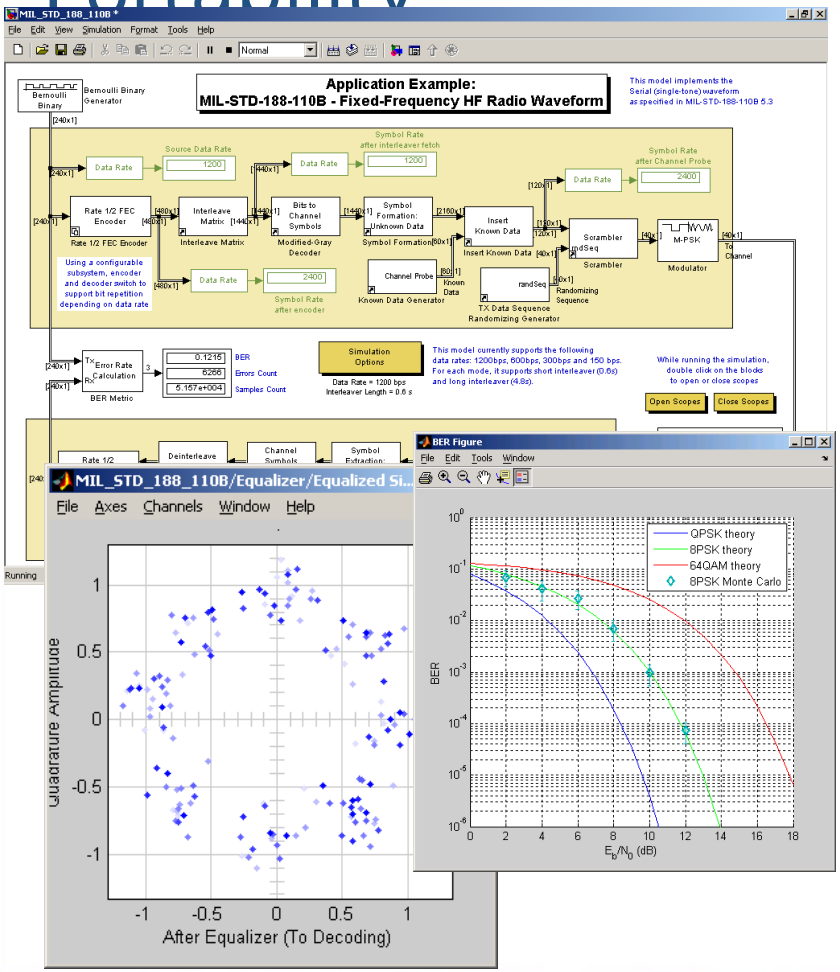


- Use Simulink model as reference and executable specification
- Create and validate design
- Detect design flaws early
- Reduce risk and time-to-market

- Partition the design
- Add target-specific implementation detail (e.g. TI, Altera, Xilinx)

- Complete design flow to embedded hardware (FPGA + DSP + Microprocessor)

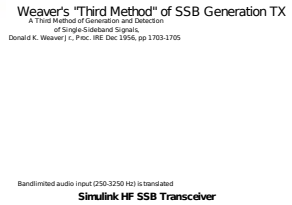
MathWorks Capabilities for SDR Code Portability

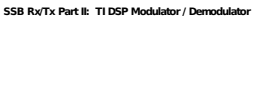


- Framework for sharing specs and system requirements
- Extensible IP block libraries, software APIs, data type support
- Open, customizable, extensible
- De facto industry standard for numerical computing

Code Generation + Verification and Validation

- Hardware-independent design, simulation, code generation
- Embedded code generation for Microprocessors, DSPs, FPGAs
- Open verification tools platform, test bench portability
- Large third-party support





Texas Instruments

Code Composer Studio

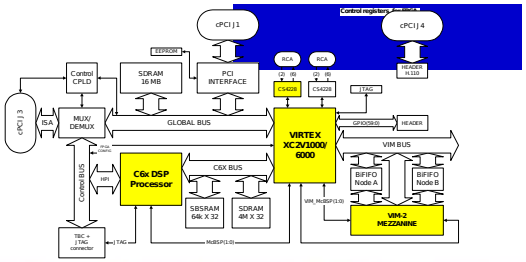
Mentor Graphics

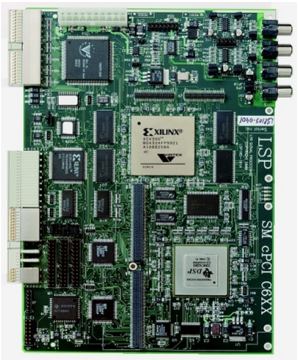
Model Sim®

ALTERA

XILINX

XILINX SYSTEM GENERATOR™ For Simulink®





Examples of Signal Processing Applications

- Both Xilinx and Altera have chosen to build their signal processing strategy on the Simulink platform.

- "Sandia Implements a High-Performance Radar Receiver Using MathWorks and Xilinx DSP Design Tools."

- "Lockheed Martin Aeronautics and The MathWorks Achieve Milestone With Successful F-35 JSF Flight Simulator Test. The MathWorks Software and Model-Based Design Approach Used to Design, Code, and Test Flight-Control System."

Recommendations to JTRS JPO

- Use **Simulink** to completely specify the Signal Processing Subsystem (SPSS) **without** locking into a specific vendor or technology.
- Vendors and users can then optimize per platform for specific FPGA, DSP, or Microproc technology targets.
- SCA: Any contractor can implement any part of the SPSS from the executable **Simulink** specification.

Everyone has equal footing.

Simulink is the ideal design portability platform.